

INTERNATIONAL SEARCH REPORT

International Application No.
PCT/JP03/00149

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 C21D9/56 C21D1/76

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 C21D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

PAJ, EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A <i>Am</i>	PATENT ABSTRACTS OF JAPAN vol. 1996, no. 01, 31 January 1996 (1996-01-31) -& JP 07 233420 A (TOSHIBA CORP), 5 September 1995 (1995-09-05) abstract paragraphs '0015!-'0023! ---	1-5, 10, 12
A <i>AN</i>	PATENT ABSTRACTS OF JAPAN vol. 2002, no. 05, 3 May 2002 (2002-05-03) -& JP 2002-003953-A (SUMITOMO METAL IND LTD), 9 January 2002 (2002-01-09) abstract paragraphs '0009!, '0010!, '0015!-'0019!, '0038!-'0044! --- -/--	1-5, 10, 12

☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

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Date of the actual completion of the international search

13 November 2003

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02/12/2003

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A AG	EP 0 379 104 A (LINDE AG) 25 July 1990 (1990-07-25) column 2, line 18 - column 3, line 18 column 5, line 12 - line 46; figure 1 ---	1-5
A AA	US 4 966 632 A (VINCKX VALERY ET AL) 30 October 1990 (1990-10-30) column 5, line 6 - line 24 column 5, line 45 - line 56 ---	1-5
A AB	US 5 137 586 A (KLINK JAMES H) 11 August 1992 (1992-08-11) column 7, line 12 - line 33 column 7, line 59 - column 8, line 21; figures 5,7 ---	1-5
A AS	EP 0 979 879 A (AIR LIQUIDE) 16 February 2000 (2000-02-16) paragraphs '0001!', '0020!' - '0022!', '0026!' - '0028!; figure 1 -----	1

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Information on patent family members

International Application No
PCT/JP03/00149

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
JP 07233420	A	05-09-1995	NONE	
JP 2002003953	A	09-01-2002	NONE	
EP 0379104	A	25-07-1990	DE 3926417 A1 AT 96467 T DE 59003173 D1 EP 0379104 A1 JP 2228420 A	19-07-1990 15-11-1993 02-12-1993 25-07-1990 11-09-1990
US 4966632	A	30-10-1990	FR 2628752 A1 FR 2628753 A1 BE 1007266 A3 DE 3908027 A1 IT 1229078 B US 5064173 A	22-09-1989 22-09-1989 09-05-1995 28-09-1989 18-07-1991 12-11-1991
US 5137586	A	11-08-1992	NONE	
EP 0979879	A	16-02-2000	FR 2782326 A1 EP 0979879 A1 JP 2000064006 A US 6224692 B1	18-02-2000 16-02-2000 29-02-2000 01-05-2001